



**CAD, CAE AND CAM OF SOLID DISC BRAKE, AND THE FOUNDRY  
PROCESS**

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A thesis submitted in partial fulfilment of the requirements for the award of  
Bachelor Engineering (Hons) (Mechanical)

**Faculty of Mechanical Engineering  
Universiti Teknologi MARA (UiTM)**

**MARCH 2004**

## ACKNOWLEDGEMENT

This project represents a total of three semesters of effort. It could not have been succeed and produced without the help of many people. It gives me great pleasure to acknowledge the assistance of the following in the accomplishment of this project.

I am very grateful to Prof. Madya Ir. Iskandar Abdullah, Project Advisor, for his continued guidance, enthusiastic help, and numerous good suggestions regarding this project. Many thanks to Prof. Madya Dr. Wahyu Kuntjoro for his guidance and assistance of this project, and to Mr Shamsuhaidi, the computer laboratory technician. Encik Musa, the Hiconm Engineering Sdn Bhd Foundry Operation Division Manger for his continued support. It has been a great pleasure to work together, through these three semesters, lots of experience is gained.

I would also like to acknowledge the help of my colleagues and former students for their various suggestions and comments: Razif, Erwan, Kery and Nizam. Finally, many thanks to my family, for their encouragement during the succession of this project.

Izam & Jamal

## ABSTRACT

Computer evolution today plays a major role in our technological and economical development. Rather than once only being a platform for simple word processing and spreadsheet, their evolution has made them extensively important not only to certain area or scope of work but also to technical development namely engineering. Computer use in assessing and solving engineering problem has made them is more practical rather by conventional tedious calculation method. However, for any engineering tasks or problem being solve by computer, users him or herself must possesses a strong basis; conceptually and theoretically so that computer can be effectively used. Not only during design stage (CAD), CAE and CAM enables engineering analysis and manufacturing processes to be done by numerical method. It is important thus, to be able to fully utilize these platforms as the knowledge in this area is an advantage. These theses hence will utilize CAD, CAE and CAM software for manufacturing process before proceeding to product foundry process. ***“CAD, CAE and CAM of Solid Disc Brake and the Foundry Process”***.

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## **CHAPTER 1: INTRODUCTION AND NOMENCLATURE**

### **1.1 INTRODUCTION**

A creation starts with an idea but to actually develop this idea is not as simple as it seem. It is the field of engineering design that deals with consequences of an idea. It is long hours of work and research before an idea can be physically produced.

In engineering, since engineering is problem solver, a creation is set to meet a specific purpose or purposes. These purposes are the design needs. It is these needs that bound and limit the design process. Relevant data and information collection is crucial and utmost important. The need and idea later on must be conceptually translated thus make it possible to be modelled for further work. Conceptually translating includes the geometrical, material and mechanical properties of the creation. It is now where by the so call model is analysed whether upon usage will meet its purpose of creation. CAD process is the process involve up to the point where conceptual design is produced and CAE process starts when analysis is to be done to the model. Often, it is only after undergoing several series of analysis process with design modification, the design needs can be fulfilled. Modification done to basic concept idea is an optimisation process; the process whereby alteration and changes is implemented to concept in hand so that during that analysis results are within a acceptable range of standard set forth before. Analysis carried out might be to a computer generated model or to an actual physical model known as prototype. After confirming that the design will be able to meet its need, it now the time to actually produce the product. This production process that involve is either casting, forming, shaping, machining, etc process.

In all, these manufacturing processes is summarised in the flow or cycle shown in the next page.